

## MIND, BRAIN AND THE LAW

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The possibility of using neuroimaging techniques to identify the neural correlates of moral judgment by means of is, undoubtedly, one of the most important developments in the history of normative social sciences. As neuroscience gradually affords a more sophisticated knowledge of the brain, the possible moral, legal and social implications of the knowledge about our cognitive ontogenetic program are beginning to be considered under a more empirical perspective and in a way which is more respectful with scientific methods.

Specifically in relation to the law, it seems possible to conjecture that neuroscientific research on moral and legal cognition can eventually affect our understanding of the nature of human thought and behavior, with profound consequences for the domain of the legal phenomena, from ontological and methodological perspectives. There is no human institution as fundamental as juridical norms, and no other field of scientific inquiry as stimulating as the study of the brain. The combination of those elements, norm and brain, represents a naturally fascinating and stimulating link, given that juridical norms and the behaviors they regulate are both products of mental processes. In this particular context, the process of juridical interpretation and application seems to be the adequate mechanism, the only possible means, and the instrument with the necessary and sufficient capacity to bring the natural combination of brain and norm to light.

Neither principles nor rules themselves regulate their application in the field of human behavior. They only represent the passive foundations of the juridical system. In order to reach a comprehensive model, an active pillar must be added to the passive

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ones. This involves a procedure of interpretation, justification and application of juridical rules and principles. Hence, the levels of rules, principles and human behavior must be complemented by a third one: a process of specific realization of the law and the corresponding, and inescapable, subjective-individual dimension of the jurist-interpreter, this is, the neural level. In other words, with Gadamer or Dworkin, because law is interpretation, there is no other law than applied law.

So, the idea, as we are seeing here these days, is to discuss the issues related with the impact that cognitive neuroscience can have on the current methodological and theoretical edifice of juridical science. If the ultimate cause of individualization of the juridical reasoning or response does not lie from the legal system, though it must be compatible with it, it seems obvious that it must lie in the juridical operator's personal convictions. That is to say, the subjectivity present in all act of juridical comprehension, interpretation and application must be approached by means of the analysis of the neural correlates of the juridical operator. Paraphrasing Philip Tobias' (1997) observation regarding the faculty of language, we judge with the brain.

In fact, there is every reason to believe that decision-making arises from electrochemical activity of the brain's neural networks. The experience of deciding is not a fiction, but a consequence of physiological activity of a brain (the product of cognitive and emotional systems in the brain) genetically molded throughout the evolutionary history of our species and designed to think in a certain fashion. It is a neural process, with the obvious function of selecting the "best solution" in light of foreseeable consequences and their grounding.

It so happens that all hermeneutic constructions, such as the unity of the law's realization elaborated by contemporary theories, are currently based on the dominant explanatory model of rational choice theory, building an ideal image of the jurists' rationality and emotions in the process of decision-making. Its fundamental concept is that, above all, judges are essentially rational and objective in their assessment of the justice of the decision: they examine all factors related with the case to the best of their ability and weigh the probable result of each of the possible options. The preferred choice, the just one, is the one which fits better with the criteria of rationality and objectivity by which it was generated.

The process of analyses we just described implies, essentially, an incompatible operation with the knowledge afforded by neuroscience. It shapes a rational image, the

decision of the judges, of something which seems to be, in itself, an activity which involves certain irrational aspects.

The inadequacy of this image is brought to light with the analysis of how the brain works during moral decision-making about what is just and unjust. Owing to the brain processes that have been associated with this cognitive operation, it is necessary to accept the undeniable presence of non-logical elements and, in general, of the intrusion of values in juridical reasoning. In light of this, it is not acceptable nor legitimate to carry on considering the hermeneutic task as an operation or set of operations exclusively directed by deductive or cognitive syllogism. In fact, the human mind seems to incorporate certain design defects that blur our biological legacy in regard to full cognitive rationality and objectivity.

Thus the ethical juridical judgment, based not only on reasoning but also on emotions and moral sentiments, carried out by brain mechanisms cannot be considered as totally independent from the constitution and functioning of this organ that, in a first analyses, seems not to have a single and nucleus for moral cognition. The best neuroscientific model of normative judgment in the law and justice available today seems to suggest that juridical reasoning implies a wide recruiting and use of different systems of mental skills, related both to rational and emotional thought, and various information sources, as Goodenough and Prehn (2005) suggested. It is the coordinated and integrated activity of various brain structures that makes human moral behavior possible. Moral judgment requires the interaction of frontal regions of the brain and other centers, in a process involving emotion and intuition as fundamental components. On the other hand, the activity of each of these brain regions is observed in a wide diversity of cognitive operations, some related with social intelligence and others not, as shown by the studies carried out by Greene (Greene et alii 2001; 2002) and Moll (Moll et alii, 2002; 2003).

However, the identification of the cerebral basis that dictate the sense of justice still raises relevant doubts, both in relation to its ontological and methodological aspects. Can neuroscientific models of normative judgment in law and justice offer powerful tools to identify falsities underlying common conceptions about human psychology and rationality? To what point is it possible to find out where cognition ends and emotion begins in the process of the realization of law? How far can this neuroscientific perspective influence the current theoretical and methodological edifice of juridical science? Or while we're at it, how will our conception of man as cause and

purpose of law change?, and consequently, will the jurist-interpreter's task of the of giving "hermeneutic life" to positive law be altered?

These questions have inspired a research project we have began to develop at the Laboratory of Human Systematics, at the University of the Balearic Islands. Our objective is to identify brain areas active during judgment tasks in magistrate professionals and control participants by means of MEG and fMRI.

The project aims to identify the brain regions that are associated with the performance of certain types of judgment. Specifically, our objective is to study brain activity associated with judgments of a juridical nature and contrasting them with those of a purely moral nature, without juridical consideration. Additionally, we intend to compare the brain activity of magistrate professionals and people unrelated with this profession when performing these judgments. The following questions will be addressed: (I) whether "easy" and "difficult" ("hard cases") judgments involve the same brain processes; (II) whether brain activity in magistrate professionals is the same or similar to that of other citizens; and (III) whether the activation of those brain circuits coincides during ethical juridical, moral judgments and judgments without juridical weight.

The recording of brain activity associated with these judgments will be carried out by means of magnetoencephalography (MEG) and functional magnetic resonance imaging (fMRI), with the objective of accurately establishing temporal and spatial patterns. The project is related with two other ones. The first, carried out from the year 2000 to 2003, investigated the evolutionary dimension of language, as well as moral and aesthetic judgments. The second, initiated in 2003, was aimed at analyzing brain activity during aesthetic judgments with a great temporal resolution (Cela-Conde et al., 2004). In the present project, the study of the activation of brain circuits during moral judgment tasks will be undertaken. A special emphasis will be placed on ethical juridical judgments and on the professional experience of magistrates as a possible source of differences.

The central idea is that the proposed experiments will allow, in the first place, to ascertain which brain regions participate in judgment processes, both juridical and purely moral judgments, both in the easy and difficult cases, all this in participants without clinically diagnosed disturbances. We are not only interested in the spatial localization of brain activity, we are also interested in its temporal distribution, which is enormously important when understanding cognitive functions, as Barteks and Zeki

(2004) pointed out. Additionally, we aim to understand to what extent do magistrate professionals use the same cognitive judgment processes as the citizens without judicial responsibilities.

It also permits the definition of whether in the act of judging (specially in the called ones “hard cases”) the answers to the dilemmas by the different subjects participating in the experiment vary substantially, most particularly regarding the activities undertaken by magistrates belonging to a Tribunal (in 2° jurisdiction ) and by judges who exercise the jurisdictional activity in the first degree of jurisdiction (in the first instance). In this sense, it seems reasonable to assume that, in the first case (judges belonging to the Tribunal), the neural correlates of active judging are the same as those found in the **trolley type dilemma**, which involves a greater personal distance for who is judging the action. The magistrates, who stand far from the parties and the concrete facts, intervene in a non-arbitrary and *impersonal* way in the life plans of the individuals involved in the lawsuit.

On the other hand, in the case of judges of first instance, the neural correlates of the act of judging may be similar to those found in the **footbridge type dilemma**, which involves a greater personal proximity with the juxtaposed interests,. Given that they are in direct contact with the parties and concrete facts, the non-arbitrary form of intervention implies a *personal judgment* in the act of intervening in the life plans of the individuals involved in the lawsuit. However, it is obvious that the final result of both cases is the same: applying the law to a specific case, intervening in an institutional and non-arbitrarily form in the life plans of the people involved in a certain conflict of interests.

Finally, this research project will allow us to identify the role that rationality and emotion play in the act of judging and, thereafter, to design a methodological model which is more suitable for the task of interpretation and application of positive law.

It is obvious that research in cognitive neuroscience of moral judgment, and a very especially, of normative judgment in Law and Justice, may provide an enormous and rich contribution to the detailed understanding of the internal functioning of the human brain in the act of judging –of carrying out moral judgments about the just and the unjust. Neuroscience may provide the necessary evidence about the nature of brain activity and the brain stimuli involved in the decision process, on the degree of personal involvement of the judges and the cultural conditioning in each specific case, and also

on the limits of rationality and the degree of influence of the emotions and the human sentiments in the formulation and conception about the “best decision”.

It is because neuroscience can prove the involvement of imperfect emotions and irrational elements that we actually experiment in the task of judging, that it can make such a profound contribution to the design and elaboration of “just decisions”. This contribution should become more relevant than the illusion about rationality and ideal emotions that we would like judges to have in the process of making the correct decision.

Without forgetting of course, other distinctive aspects of the nature of human behavior at the time of deciding on the sense of concrete justice and the existence of a moral universe determined by the biological nature of our cognitive (neuronal) architecture. After all, it is the brain that allows us to have a moral sense, that gives us the necessary skills to live in society, to make decisions and solve certain social conflicts, and that serves as a base for the most sophisticated philosophical discussions and reflections on rights, duties, injustice and morality.